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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,206	09/27/2001	David D. Crouch	PD-00W158	2929

23915 7590 10/03/2003

PATENT DOCKET ADMINISTRATION  
RAYTHEON SYSTEMS COMPANY  
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BLDG E1 M S E150  
EL SEGUNDO, CA 90245-0902

**BEST AVAILABLE**

EXAMINER
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WIMER, MICHAEL C

ART UNIT	PAPER NUMBER
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2821

DATE MAILED: 10/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/965,206

Applicant(s)

CROUCH ET AL.

Examiner

Michael C. Wimer

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 and 34-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-18 and 25-29 is/are allowed.
- 6) ☒ Claim(s) 1-9, 19-24 and 30-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_. 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5,9,19,23,24,30 and 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanamaluru et al (6370398 B1).

Regarding Claims 1-5,9,19,23,24,30 and 34-37 Kanamaluru et al show in Figures 4 and 5, a wavefront transformer/method of making thereof, 64,65 which transforms the EM wavefront having a given shape to a reflected wavefront having a different shape comprising a substrate 64, with an arbitrarily-shaped and a substantially flat conductive surface for reflecting incident EM energy, and a plurality of openings 65 in the conductive surface, each opening formed by a respective one of a plurality of discrete cavities extending from the conductive surface, each cavity having a bottom surface, each cavity having a selected position on the conductive surface with respect to a focal point to induce a propagation phase shift over the distance to the focal point (Fig. 5), each cavity inducing a local phase shift in the reflected EM energy as a function of a selected dimension of the cavity, and the combined propagation phase shift and local phase shift from the plurality of cavities places the reflected EM energy in phase at the focal point. It would have been obvious to the skilled artisan that the

phase shift claimed here results due to the quarter wavelength depth of the cavities in the metal twist plate 64.

Further regarding Claim 4, column 5, fourth paragraph suggests two plates.

Further regarding Claim 19, Kanamaluru et al. teaches that the plate 64 may be integrated with the electronics (col. 6, lines 58-65).

3. Claims 1,6-8,20-22 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bains et al (6429823 B1).

Regarding Claims 1,6-8,20-22 and 31, Bains et al teach and show a wavefront transformer 204 formed of a substrate of adjustable horn cavities 202, where their depth are adjustable via short 216 and are spaced according to a particular design, and where the phase within the conductive substrate collectively formed by the horns varies to provide a propagation phase shift. It would have been obvious to the skilled artisan that the combined propagation phase shift and local phase shift from the plurality of cavities places the EM energy in phase at the focal point (at 202) of the reflector. The cavities are circular, cylindrical and form an equilateral-triangular arrangement as shown in Fig. 2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Wimer whose telephone number is (703) 305-3555. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don K. Wong can be reached on (703) 308-4856. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Michael C. Wimer  
Primary Examiner  
Art Unit 2821

MCW  
22 September 2003